

R E M A R K S

Claims 1-27 stand rejected under 35 U.S.C. as being anticipated by various references. Claims 2, 3, 7, 10, and 16-27 have been canceled, claims 1, 4-6, 8, 9, and 11-15 have been amended and claim 28 has been added.

Claims 2 and 3 have been canceled in light of amendments made to independent claim 1. Claims 1, 4, 5, 8, 9, 11, 12 14 and 14 have been amended to avoid any potential ambiguity arising from the use of the terms monomer and sealant, to correct or add new claim dependencies and/or to broaden their scope. Claims 7 and 10 have been canceled to any potential ambiguity arising from the use of the terms monomer and sealant. Newly presented claim 28 is dependent directly from independent claim 1.

Applicant respectfully traverses the Examiner's holding that the method of curing does not further the final product structure. In order to reduce the issues involved in the present application, apparatus claims 16-27 have withdrawn without prejudice and applicant reserves the right to file a continuation application to resubmit apparatus claims.

Pending claims 1, 4 - 6, 8 and 11-13 stand rejected under 35 U.S.C. 102(b) as being anticipated by Newbould. As noted by the Examiner, Newbould teaches a method of welding in which a monomer adhesive is first partially cured by laser energy and then fully cured in an oven to weld surfaces together. Independent claim 1 has been amended to claim a method of welding including positioning a monomer, which is at least partially cured without substantial damage by temperatures produced during friction stir welding, between surfaces to be welded together and friction stir welding at least portions of the surfaces through the monomer to form a welded joint and to form a sealant adjacent the welded joint between the surfaces by at least partially curing the monomer which is not taught or suggested by Newbould. Pending claims 4 - 6, 8, 11-13 and newly presented claim 28 are dependent on independent claim 1 as amended.

Pending claims 1 and 13 stand rejected under 35 U.S.C. 102(b) as being anticipated by White. Applicant respectfully traverses the Examiner's holding that White teaches a method of friction stir welding to cure a sealant between surfaces being welded. In particular, White teaches

that an adhesive can be incorporated at an interface between surfaces to be friction stir welded and that the adhesive will be broken up and distributed in the weld channel as harmless particles. Independent claim 1 has been amended to claim a method of welding including positioning a monomer, which is at least partially cured without substantial damage by temperatures produced during friction stir welding, between surfaces to be welded together and friction stir welding at least portions of the surfaces through the monomer to form a welded joint and to form a sealant adjacent the welded joint between the surfaces by at least partially curing the monomer which is not taught or suggested by White. Pending claim 13 and newly presented claim 28 are dependent on independent claim 1 as amended.

Pending claims 1,6, 9, 11 and 13 stand rejected under 35 U.S.C. 102(b) as being anticipated by Kimura. As noted by the Examiner, Kimura teaches the use of a monomer adhesive and welding to cure and polymerize the sealant. Independent claim 1 had been amended to claim a method of welding including positioning a monomer, which is at least partially cured without substantial damage by temperatures produced during friction stir welding, between surfaces to be welded together and friction stir welding at least portions of the surfaces through the monomer to form a welded joint and to form a sealant adjacent the welded joint between the surfaces by at least partially curing the monomer which is not taught or suggested by Kimura. Pending claims 6, 9, 11 and 13 and newly presented claim 28 are dependent on independent claim 1 as amended.

Pending claims 1, 6 and 13-15 stand rejected under 35 U.S.C. 102(b) as being anticipated by Mainwaring. As noted by the Examiner, Mainwaring teaches the use of a monomer adhesive, including a fluoroelastomeric material, and welding to cure the sealant. Independent claim 1 has been amended to claim a method of welding including positioning a monomer, which is at least partially cured without substantial damage by temperatures produced during friction stir welding, between surfaces to be welded together and friction stir welding at least portions of the surfaces through the monomer to form a welded joint and to form a sealant adjacent the welded joint between the surfaces by at least partially curing the monomer which is not taught or suggested by Mainwaring. Pending claims 6 and 13-15 and newly presented claim 28 are dependent on independent claim 1 as amended.

Pending claims 1, 6, 11 and 12 stand rejected under 35 U.S.C. 102(b) as being anticipated by Hoult. As noted by the Examine, Hoult teaches positioning a monomer adhesive between surfaces to be welded and applying laser heat to cure the sealant. Independent claim 1 has been amended to claim a method of welding including positioning a monomer, which is at least partially cured without substantial damage by temperatures produced during friction stir welding, between surfaces to be welded together and friction stir welding at least portions of the surfaces through the monomer to form a welded joint and to form a sealant adjacent the welded joint between the surfaces by at least partially curing the monomer which is not taught or suggested by Hoult. Pending claims 6, 11 and 12 and newly presented claim 28 are dependent on independent claim 1 as amended.

Pending claims 1, 6, and 13 stand rejected under 35 U.S.C. 102(b) as being anticipated by Jogan. Applicant respectfully traverses the Examiner's holding that Jogan teaches a method of welding comprising positioning a monomer adhesive sealant between surfaces and friction welding to cure the sealant in that Jogan does not teach curing the monomer.

Jogan teaches the use of any sealing agent capable of fluid-tightly sealing the gap between the joining surfaces of the metal plates. Jogan teaches that the sealing agent may be made of metal, such as aluminum, or of waterproof resin adhesives. The waterproof resins are said to preferable because they can improve the joining (adhesive) durability. Jogan further teaches that a gap formed between the joining surfaces is liquid-tightly sealed by the sealing agent at least in the vicinity of the peripheral portion of cooling medium. As shown in Figs. 3A and 3B, Jogan shows sealing agent 11 positioned near passageway 4 which is centered between two welded portions 20, that is, adjacent the passageway and not adjacent the welds.

Jogan also teaches, for example at col. 4, lines 7 and 8, that "The entire gap between the joining surfaces of the metal plates may be sealed with a sealing agent".

Jogan also teaches the use of an anodic oxide film at least covering the surfaces of the passageway, to prevent corrosion of the passageway, and preferably on the entire joining surfaces

of the metal plates to prevent corrosion of the entire joined surfaces. Friction stir welding through the oxide is said to not adversely effect the anodic oxide film.

Jogan does not, however, teach or suggest a method of welding including positioning a monomer, which is at least partially cured without substantial damage by temperatures produced during friction stir welding, between surfaces to be welded together and friction stir welding at least portions of the surfaces through the monomer to form a welded joint and to form a sealant adjacent the welded joint between the surfaces by at least partially curing the monomer as claimed in claim 1 as amended. Pending claims 6 and 13 and newly presented claim 28 are dependent on claim 1.

If this rejection over Jogan is maintained, applicant respectfully requests that the Examiner point out with specificity where in Jogan there are teachings of friction stir welding through the monomer and/or friction stir welding to form a sealant adjacent the welded joint between the surfaces by at least partially curing the monomer.

Applicant respectfully requests that the rejections be reconsidered in light of the amendments to independent claim 1 and that this application be passed to issue.

Respectfully Submitted,

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